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EXAMINER
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PARSONS, THOMAS H

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/785,992

Applicant(s)

ARAI ET AL.

Examiner

Thomas H. Parsons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

***Response to Amendment***

This is in response to the Amendment filed 20 July 2006.

***(Previous) DETAILED ACTION***

***Drawings***

1. The objection to Figure 1 as failing to comply with 37 CFR 1.84(p)(5) because it does not include the following reference sign(s) mentioned in the description has been **withdrawn** in view of Applicants' Amendment.

***Claim Rejections - 35 USC § 102***

2. The rejections of claims 1-8 and 11 under 35 U.S.C. 102(b) as being anticipated by Tomiyama et al. (5,665,491) have been **withdrawn** in view of Applicants' Amendment.

***Claim Rejections - 35 USC § 103***

3. The rejections of claims 9 and 10 under 35 U.S.C. 103(a) as being unpatentable over Tomiyama et al. are as applied to claim 4 above, and further in view of JP9-259891 have been **withdrawn** in view of Applicants' Amendment.

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

**(New) DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-8 and 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyama et al. (5,665,491) in view of Fautex (5,219,680).

**Claim 1:** Tomiyama et al. in Figure 1 disclose an electrochemical energy storage device, comprising:

a positive electrode provided with a positive electrode collector and positive electrode active material (1) which is held by the positive electrode collector and can occlude/emit (i.e. intercalate/deintercalate) a metal ion (col. 4: 42-col. 5: 30 and col. 5: 65-col. 6: 22);

a negative electrode provided with a negative electrode collector and negative electrode active material (2) which is held by the negative electrode collector and which can occlude/emit the metal ion (col. 4: 42-col. 5: 30 and col. 5: 65-col. 6: 22);

a minutely porous separator (3) held between the positive electrode and the negative electrode (col. 12: 59-col. 13: 5); and

an organic electrolyte (col. 11: 32-col. 12: 47), wherein:

Tomiyama et al. do not disclose that at least one of the positive electrode active material and the negative active material carries activated carbon.

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Fauteux discloses that the positive electrode active material and the negative active material carry activated carbon.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the active material of Tomiyama et al. by incorporating the activated carbon of Fauteux because both are concerned with lithium batteries comprising positive and negative electrodes carrying active material, and further, because Fauteux discloses positive and negative electrodes carrying activated carbon that would have provided higher current densities and storage capacities thereby improving the overall life, capacity, and performance of the battery.

Further, because the electrochemical energy storage device (i.e. lithium battery) of the Tomiyama et al. combination is structurally the same as that instantly claimed, it obviously would provide an operating range of 0-2V to 4.0 to 4.2V.

**Claim 3:** Tomiyama et al. disclose a positive electrode collector and a negative electrode collector made of material including carbonaceous material (col. 13: 6-25).

**Claim 4:** Tomiyama et al. in Figure 1 disclose an electrochemical energy storage device, comprising:

a positive electrode provided with a positive electrode collector made of carbonaceous material and positive electrode active material which is held by the positive electrode collector and can occlude/emit a metal ion (col. 4: 42-col. 5: 30 and col. 5: 65-col. 6: 22);

a negative electrode provided with a negative electrode collector made of carbonaceous material and negative electrode active material which is held by the negative electrode collector and can occlude/emit a metal ion (col. 4: 42-col. 5: 30 and col. 5: 65-col. 6: 22);

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a minutely porous separator (3) held between the positive electrode and the negative electrode (col. 12: 59-col. 13: 5); and

an organic electrolyte (col. 11: 32-col. 12: 47).

Fauteux discloses that the positive electrode active material and the negative active material carry activated carbon.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the active material of Tomiyama et al. by incorporating the activated carbon of Fauteux because both are concerned with lithium batteries comprising positive and negative electrodes carrying active material, and further, because Fauteux discloses positive and negative electrodes carrying activated carbon that would have provided higher current densities and storage capacities thereby improving the overall life, capacity, and performance of the battery.

**Claim 5:** Tomiyama et al. disclose that the positive electrode collector and the negative electrode collector are made of a carbon fiber (col. 13: 6-25 which discloses carbon in the form of a fibrous body).

**Claim 6:** Tomiyama et al. disclose that the carbon fiber is woven cloth (col. 13: 6-25 which discloses carbon in the form of a fibrous body).

**Claim 7:** Tomiyama et al. disclose that the positive electrode active material and the negative electrode active material are applied to the carbon fiber (col. 13: 29-31).

**Claim 8:** Tomiyama et al. disclose that both of the positive electrode collector and the positive electrode active material and both of the negative electrode collector and the negative electrode active material are held on metallic foil (col. 13: 6-31 wherein Tomiyama et al.

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disclose that the current collector can be a metallic foil coated with carbon and the active material mixture).

**Claim 11:** Tomiyama et al. disclose that a lithium salt is dissolved in the organic electrolyte (col. 11: 32-col. 12: 47).

**Claims 12 and 13:** Tomiyama et al. disclose that suitable materials for the positive and negative current collector include carbon in the form of a fibrous body. This fibrous carbon body has been broadly construed as encompassing activated carbon.

**Claim 14 and 15:** The rejection of claims 14 and 15 have been rejected as set forth above in claims 1 and 4.

**Claims 16-18:** The recitations therein to the operating voltage range has been construed as a process limitation that adds no further structure to the claimed electrochemical energy storage device. However, as set forth above in claim 1, because the electrochemical energy storage device (i.e. lithium battery) of the Tomiyama et al. combination is structurally the same as that instantly claimed, it obviously would provide an operating voltage range having a lower limit less than 2V, as recited in claim 16, an upper limit greater than 4.0V, as recited in claims 17 and 18.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyama et al. in view of Fauteux as applied to claim 4 above, and further in view of JP9-259891.

Tomiyama et al. and Fauteux are as applied, argued, and disclosed above, and incorporated herein.

**Claims 9 and 10:** The Tomiyama et al. combination does not disclose that the either or both of the positive electrode collector or/and the positive electrode active material and either or both of the negative electrode collector or/and the negative electrode active material are held on a plastic sheet or a metallized plastic sheet.

JP9-259891 discloses in Figures 1 and 2 that both of the positive electrode collector and the positive electrode active material and both of the negative electrode collector and the negative electrode active material are held on a plastic sheet or a metallized plastic sheet (abstract and paragraphs [0007]-[0016]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the Tomiyama et al. combination by incorporating the plastic sheet of JP9-259891 because both are concerned with a lithium battery comprising a positive and negative current collector carrying active material, and further because JP9-259891 discloses a plastic sheet for holding both of the positive electrode collector and the positive electrode active material and both of the negative electrode collector and the negative electrode active material that would have improved the safety and reliability by preventing a temperature rise with the rapid cell temperature by an internal short circuit.



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***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas H Parsons  
Examiner  
Art Unit 1745

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PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER